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CLAIMS

1. Substantially pure DNA encoding a *Salmonella* secreted protein (Ssp).
2. The DNA of claim 1, wherein said DNA comprises  
5 the SspB gene.
3. The DNA of claim 2, wherein said DNA comprises the DNA sequence of SEQ ID NO: 1 or degenerate variants thereof encoding the amino acid sequence of SEQ ID NO: 5.
4. The DNA of claim 1, wherein said DNA comprises  
10 the SspC gene.
5. The DNA of claim 4, wherein said DNA comprises the DNA sequence of SEQ ID NO: 2 or degenerate variants thereof encoding the amino acid sequence of SEQ ID NO: 6.
6. The DNA of claim 1, wherein said DNA comprises  
15 the SspD gene.
7. The DNA of claim 6, wherein said DNA comprises the DNA sequence of SEQ ID NO: 3 or degenerate variants thereof encoding the amino acid sequence of SEQ ID NO: 7.
8. The DNA of claim 1, wherein said DNA comprises  
20 the SspA gene.
9. The DNA of claim 8, wherein said DNA comprises the DNA sequence of SEQ ID NO: 4, or degenerate variants thereof encoding the amino acid sequence of SEQ ID NO: 8.
10. The DNA of claim 1, wherein said DNA  
25 comprises the SspB gene, the SspC gene, the SspD gene and the SspA gene.

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11. The DNA of claim 10, wherein said DNA comprises the DNA sequence of SEQ ID NO: 15.

12. The DNA of claim 1, wherein said DNA comprises the SspH gene.

5 13. The DNA of claim 12, wherein said DNA comprises the DNA sequence of SEQ ID NO: 13, or degenerate variants thereof encoding the amino acid sequence of SEQ ID NO: 14.

10 14. The DNA of claim 1, wherein said DNA comprises the stpA gene.

15 15. The DNA of claim 14, wherein said DNA comprises the DNA sequence of SEQ ID NO: 10 or degenerate variants thereof encoding the amino acid sequence of SEQ ID NO: 12.

16. A cell which contains the DNA of claim 1.

*Sub* 17. A method of inducing uptake of a bacterial cell by an epithelial cell in a mammal, comprising increasing expression of the DNA of claim 4 or 6 in said cell and administering said cell to said mammal.

20 <sup>43</sup> 18. The method of claim <sup>42</sup> 17, wherein said bacterial cell is a *Salmonella* cell.

19. A method of inducing uptake of a bacterial cell by a macrophage in a mammal, comprising decreasing expression of the DNA of claim 4 or 6 and administering  
25 said cell to said mammal.

20. A substantially pure SspC polypeptide.

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21. The polypeptide of claim 20, comprising an amino acid sequence substantially identical to the amino acid sequence of SEQ ID NO: 6.
22. An active fragment of the polypeptide of claim 21.
23. A substantially pure SspD polypeptide.
24. The polypeptide of claim 23, comprising an amino acid sequence substantially identical to the amino acid sequence of SEQ ID NO: 7.
25. An active fragment of the polypeptide of claim 24.
26. A substantially pure SspH polypeptide.
27. The polypeptide of claim 26, comprising an amino acid sequence substantially identical to the amino acid sequence of SEQ ID NO: 14.
28. An active fragment of the polypeptide of claim 27.
29. A substantially pure IagB polypeptide.
30. The polypeptide of claim 29, comprising an amino acid sequence substantially identical to the amino acid sequence of SEQ ID NO: 11.
31. An active fragment of the polypeptide of claim 30.
32. An antibody which binds to a Ssp.

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33. A method of detecting a *Salmonella* infection in a mammal comprising contacting a biological sample derived from said mammal with the antibody of claim 32 and detecting the binding of said antibody to a Ssp in  
5 said sample, wherein said binding indicates that said mammal is infected with *Salmonella*.

34. A method of detecting the presence of *Salmonella* in a biological sample comprising contacting said sample with a Ssp-encoding DNA under high stringency  
10 conditions and detecting the hybridization of said DNA to nucleic acid in said sample, wherein hybridization indicates the presence of *Salmonella* in said biological sample.

35. A method of targeting an antigen to an  
15 epithelial cell in a mammal, comprising linking said antigen to an Ssp or active fragment thereof to produce a Ssp chimeric antigen and administering said chimeric antigen to said mammal.

36. The method of claim 35, wherein said Ssp is  
20 SspC or SspD.

37. A method of inducing a cytotoxic T cell immune response in a mammal, comprising linking said antigen to an Ssp or active fragment thereof to produce a Ssp chimeric antigen and contacting an antigen-presenting  
25 cell with said chimeric antigen.

38. A vaccine comprising a bacterial cell the virulence of which is attenuated by decreased secretion of a Ssp.

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39. The vaccine of claim 38, wherein said bacterial cell is a *Salmonella typhimurium* cell.

40. The vaccine of claim 39, wherein said bacterial cell is a *Salmonella enteriditis* cell.

5 41. The vaccine of claim 38, wherein said bacterial cell is a *Salmonella typhi* cell.

42. A live *Salmonella* cell in which a gene encoding a heterologous antigen is inserted into a Ssp-encoding gene.

10 43. A method of vaccinating an animal against a *Salmonella* infection comprising administering the vaccine of claim 38.

44. A substantially pure StpA polypeptide.

15 45. A method of dephosphorylating a protein, comprising contacting said protein with the polypeptide of claim 44 or an active fragment thereof.

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